Benefits of a Collaborative Monitoring Strategy

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Biographical Sketch of Presenting Author
Pixie Hamilton has worked as a hydrologist for the USGS since 1984, primarily doing regional ground-water modeling and regional and national water-quality assessments. She currently serves as a Staff Hydrologist and Water Information Coordinator for the National Water-Quality Assessment (NAWQA) Program, which assesses water-quality conditions and trends in some of the nation's most important streams and aquifers. Her current emphasis largely is on communicating research and technical implications of NAWQA information to government, research, and interest-group partners in order to help guide water-resource management and protection strategies and policy.

Abstract
A single monitoring program, by itself, cannot address the full range of water-resource issues. Collaborative monitoring and data sharing among the U.S. Environmental Protection Agency (EPA), U.S. Geological Survey (USGS) and other federal agencies, States and Tribes, and volunteer organizations are critical to understanding, protecting, and restoring water quality at all scales, and to ultimately get the best return from federal and state monitoring investments.

Such collaboration requires a balanced approach with multiple monitoring designs and tools, including: (1) Probabilistic-Based (or "random") designs, which allow characterization and prioritization of water resources across a State or the Nation by answering broad questions, such as "What percentage of rivers and streams are impaired, and what are the average concentrations across the State?"; (2) Targeted designs, which address leading causes of impairment (such as land use and natural features); whether conditions at specific locations are getting better or worse over time; and, effectiveness of management actions; and (3) Predictive Tools, such as landscape models that utilize data from the combined probabilistic and targeted approach to better predict where and when impairment will occur, and to extrapolate findings to unmeasured areas. Resources are, thereby, optimized by strategically targeting monitoring and water-management actions to the most vulnerable ecosystems.

The State of Virginia has developed a balanced and collaborative monitoring strategy that embraces partnerships and data sharing, and incorporates probabilistic and targeted designs and multiple tools for predictive capabilities. The Virginia strategy supports the full range of decisions for all water body types and strengthens the State's ability to protect its water quality and achieve water-quality standards in the most cost-effective and efficient manner.

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